

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended): A liquid crystal display device, comprising:

a plurality of data lines arranged along a first direction on a substrate;

a plurality of gate lines arranged along a second direction perpendicular to the first direction on the substrate to define a plurality of pixel regions, each of the gate lines having at least one set of protrusions and depressions extending in a direction substantially perpendicular to a surface of the substrate on which the gate lines are arranged;

a driving device within each of the pixel regions;

a pixel electrode within each of the pixel regions; and

a metal layer overlapping each of the gate lines to create a storage capacitor, the metal layer having at least one set of protrusions and depressions extending in a direction substantially perpendicular to a surface of the substrate on which the metal layer is arranged.

Claim 2 (Original): The device according to claim 1, wherein the first set of protrusions and depressions is arranged along the second direction of the gate lines.

Claim 3 (Original): The device according to claim 2, wherein the first set of protrusions and depressions are arranged along the first direction of the data lines.

Claim 4 (Original): The device according to claim 2, wherein the first set of protrusions and depressions are arranged having a lattice shape.

Claim 5 (Original): The device according to claim 1, wherein the driving device includes a thin film transistor.

Claim 6 (Original): The device according to claim 5, wherein the thin film transistor includes:

- a gate electrode on the substrate;
- a gate insulating layer over the substrate;
- a semiconductor layer on the gate insulating layer; and
- a source electrode and a drain electrode on the semiconductor layer.

Claim 7 (Original): The device according to claim 6, further comprising at least one first protrusion/depression layer on the substrate to form the first set of protrusions and depressions.

Claim 8 (Original): The device according to claim 7, wherein the first protrusion/depression layer includes metal material.

Claim 9 (Original): The device according to claim 7, wherein the first protrusion/depression layer includes insulation material.

Claim 10 (Original): The device according to claim 6, further comprising at least one first groove formed within a surface of the substrate to form the first set of protrusions and depressions.

Claim 11 (Original): The device according to claim 6, wherein the metal layer is disposed on the gate insulating layer.

Claim 12 (Original): The device according to claim 11, wherein the metal layer includes metal material similar to metal material of the source electrode and the drain electrode.

Claim 13 (Original): The device according to claim 6, further comprising a second set of protrusions and depressions in the semiconductor layer.

Claim 14 (Original): The device according to claim 13, wherein the second set of protrusions and depressions is formed along the source electrode and the drain electrode.

Claim 15 (Original): The device according to claim 13, wherein the second set of protrusions and depressions is arranged in a lattice shape.

Claim 16 (Original): The device according to claim 13, further comprising a second protrusion/depression layer in the substrate to form the second set of protrusions and depressions.

Claim 17 (Original): The device according to claim 16, wherein the second protrusion/depression layer includes insulation material.

Claim 18 (Original): The device according to claim 16, wherein the second protrusion/depression layer includes metal material.

Claim 19 (Original): The device according to claim 13, further comprising a second groove formed in a surface of the substrate to form the second set of protrusions and depressions.

Claim 20 (Withdrawn): A liquid crystal display device, comprising:

a plurality of data lines and gate lines arranged in a substrate to define a plurality of pixel regions;

a thin film transistor within each pixel region and including a gate electrode on the substrate, a gate insulating layer on the substrate, a semiconductor layer on the gate insulating layer and having protrusions and depressions, a source electrode and a drain electrode on the semiconductor layer;

a passivation layer on an entire surface of substrate; and

a pixel electrode on the passivation layer.

Claim 21 (Withdrawn): The device according to claim 20, further comprising at least one protrusion/depression layer on the substrate to provide protrusions and depressions in the semiconductor layer.

Claim 22 (Withdrawn): The device according to claim 21, wherein the protrusion/depression layer includes insulation material.

Claim 23 (Withdrawn): The device according to claim 21, wherein the protrusion/depression layer includes metal material.

Claim 24 (Withdrawn): The device according to claim 21, wherein the protrusion/depression layer is arranged along a direction between the source electrode and the drain electrode.

Claim 25 (Withdrawn): The device according to claim 21, wherein the protrusion/depression layer is arranged having a lattice shape.

Claim 26 (Withdrawn): The device according to claim 20, further comprising at least one groove formed in a surface of the substrate to provide protrusions and depressions in the semiconductor layer.

Claim 27 (Withdrawn): The device according to claim 26, wherein the groove is formed along a direction between the source electrode and the drain electrode.

Claim 28 (Withdrawn): The device according to claim 26, wherein the groove is arranged having a lattice shape.

Claim 29 (Withdrawn): The device according to claim 20, further comprising a metal layer arranged along a direction of the gate line to form a storage capacitor.

Claim 30 (Withdrawn): The device according to claim 29, further comprising a protrusion/depression layer arranged along a direction of the gate line.

Claim 31 (Withdrawn): The device according to claim 29, further comprising a groove formed along a direction of the gate line.

Claim 32 (Currently Amended): A method of fabricating a liquid crystal display device, comprising:

forming a plurality of data lines arranged along a first direction on a substrate;
forming a plurality of gate lines arranged along a second direction perpendicular to the first direction on the substrate to define a plurality of pixel regions, each of the gate lines having at least one first set of protrusions and depressions extending in a direction substantially perpendicular to a surface of the substrate on which the gate lines are arranged;

forming a driving device within each of the pixel regions;
forming a pixel electrode within each of the pixel regions; and
forming a metal layer overlapping each of the gate lines to create a storage capacitor, the metal layer having at least one set of protrusions and depressions extending in a direction substantially perpendicular to a surface of the substrate on which the metal layer is arranged.

Claim 33 (Original): The method according to claim 32, wherein the first set of protrusions and depressions is arranged along the second direction of the gate lines.

Claim 34 (Original): The method according to claim 33, wherein the first set of protrusions and depressions are arranged along the first direction of the data lines.

Claim 35 (Original): The method according to claim 33, wherein the first set of protrusions and depressions are arranged having a lattice shape.

Claim 36 (Original): The method according to claim 32, wherein the driving device includes a thin film transistor.

Claim 37 (Original): The method according to claim 36, wherein the thin film transistor includes:

- a gate electrode on the substrate;
- a gate insulating layer over the substrate;
- a semiconductor layer on the gate insulating layer; and
- a source electrode and a drain electrode on the semiconductor layer.

Claim 38 (Original): The method according to claim 37, further comprising forming at least one first protrusion/depression layer on the substrate to form the first set of protrusions and depressions.

Claim 39 (Original): The method according to claim 38, wherein the first protrusion/depression layer includes metal material.

Claim 40 (Original): The method according to claim 38, wherein the first protrusion/depression layer includes insulation material.

Claim 41 (Original): The method according to claim 37, further comprising forming at least one first groove within a surface of the substrate to form the first set of protrusions and depressions.

Claim 42 (Original): The method according to claim 37, wherein the metal layer is disposed on the gate insulating layer.

Claim 43 (Original): The method according to claim 42, wherein the metal layer includes metal material similar to metal material of the source electrode and the drain electrode.

Claim 44 (Original): The method according to claim 37, further comprising forming a second set of protrusions and depressions in the semiconductor layer.

Claim 45 (Original): The method according to claim 44, wherein the second set of protrusions and depressions is formed along the source electrode and the drain electrode.

Claim 46 (Original): The method according to claim 45, wherein the second set of protrusions and depressions is arranged in a lattice shape.

Claim 47 (Original): The method according to claim 44, further comprising forming a second protrusion/depression layer in the substrate to form the second set of protrusions and depressions.

Claim 48 (Original): The method according to claim 47, wherein the second protrusion/depression layer includes insulation material.

Claim 49 (Original): The method according to claim 47, wherein the second protrusion/depression layer includes metal material.

Claim 50 (Original): The method according to claim 44, further comprising forming a second groove in a surface of the substrate to form the second set of protrusions and depressions.